



## WEG Uses Ansys Simulation to Design Revolutionary Industrial Motor

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*Ansys technology is instrumental in helping WEG develop an electric industrial motor that enables OEMs to push the limits of innovation through improved efficiency and productivity*

### / Key Highlights

- Ansys technology delivers an optimal balance of simulation speed and predictively accurate results to help WEG develop W80 AXgen, an electric industrial motor that can achieve efficiency levels beyond the current industry standard
- WEG used [Ansys Mechanical™](#), [Ansys Fluent™](#), [Ansys Granta™](#), and [Ansys Electronics™](#) to develop a performant, stackable, lightweight motor ideal for industrial applications including air compressors, water pump systems, and generators

PITTSBURGH, Pa., Nov. 13, 2024 /PRNewswire/ -- WEG, a global leader in electrical technologies and automation, used [Ansys](#) (NASDAQ: ANSS) simulation solutions to develop a revolutionary industrial motor. The W80 AXgen electric motor is used in a wide range of OEM industrial applications including air compressors, water pump systems, and generators.



With support and additional services provided by Ansys Apex Channel Partner ESSS, WEG is pioneering a new path forward by introducing axial flux motors to the industrial equipment market. Axial flux motors offer a more optimized and efficient alternative to radial flux motors due to their higher power density and specific torque. Some resulting advantages include space and weight savings, high efficiency levels, and improved durability for a reliable product lifespan.

For instance, a standard industrial induction motor with a power output of 220 kW can weigh up to 1,498 kg. Using Ansys solutions, WEG reduced the weight of this model to 139 kg. Furthermore, with advanced numerical data, WEG achieved an ultra-compact design weighing 51 kg while maintaining performance power in both cases. The higher power density of this technology reduces the amount of raw material significantly, shaving downstream logistical costs like shipping and lowering CO<sub>2</sub> emissions. This demonstrates WEG's commitment to sustainability, efficiency, and innovation.

WEG leveraged multiple Ansys multiphysics simulation solutions for W80 AXgen, including:

- Ansys Fluent fluid simulation software to determine optimal liquid coolant circulation paths for heat management
- Ansys Electronics simulation solutions to design and test the magnets that spin the rotors, calculating important parameters of an electrical machine, such as the electromagnetic torque and efficiency
- Ansys Mechanical finite element analysis software to understand and refine materials load, impact, and stress factors that are central to manufacturing
- Ansys Granta materials information, selection, and data management to quickly identify the most suitable material for a motor with high power density

"With Ansys' powerful simulation tools and ESSS' excellent support, we have conducted extensive multiphysics validations in a virtual environment, leading to the successful development of advanced products like the W80 AXgen," Cassiano Antunes Cezario, r&d manager at WEG. "Ansys simulation provides the ideal balance between speed and reliability — giving us confidence that our products will be durable and perform to our customers' expectations. We are committed to efficiency, which makes using Ansys simulation an easy yet crucial choice."

The WEG W80 AXgen is available from 5.5 kW to 220 kW in a single configuration and up to 440 kW when taking advantage of the stackable configuration.

"Ansys simulation helps customers like WEG compete in the marketplace," said Prith Banerjee, chief technology officer and executive sponsor of

sustainability programs at Ansys. "We have been working diligently for over 50 years to refine our leading numerical simulation technology, and now decades of materials research is catching up. This is the perfect combination for our customers — new materials poised for innovative applications coupled with Ansys simulation solutions that deliver pervasive physics-based insights for more efficient, powerful, and resilient products."

## / About Ansys

Our Mission: Powering Innovation that Drives Human Advancement™

When visionary companies need to know how their world-changing ideas will perform, they close the gap between design and reality with Ansys simulation. For more than 50 years, Ansys software has enabled innovators across industries to push boundaries by using the predictive power of simulation. From sustainable transportation to advanced semiconductors, from satellite systems to life-saving medical devices, the next great leaps in human advancement will be powered by Ansys.

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